AMENDMENTS

TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method of using long range guided wave inspection techniques to detect geometric irregularities in a **cylindrical shell** structure, comprising the steps of:

generating a first long range wave from a first probe at a first probe position, wherein the first long range wave travels substantially in one direction from the probe along a length of the structure ;

acquiring a first data set representing reflection signals reflected from an irregularity to the first probe;

generating a second long range wave from a second probe at a second probe position having a known separation from the first probe position, wherein the second long range wave travels in the same direction ~~as~~ **relative to** the first long range wave ;

acquiring a second data set representing reflection signals reflected from the irregularity to the second probe position;

wherein the first probe and the second probe are external to the structure;

wherein the first long range wave and the second long range wave are **substantially** of a single wave mode of a fixed order, both propagated in a single direction **relative to each other;**

identifying peak signal values in the first data set and in the second data set, thereby obtaining a first set of peak signal values and a second set of peak signal values;

associating each peak signal value with an occurrence time;

time-shifting one set of peak signal values by an amount equal to the roundtrip time of the first long range wave over the distance between the first probe and the second probe;

determining a coincidence in time of values in the shifted set of peak signal values and values in the unshifted set of peak signal values; and

interpreting coincident values as corresponding to an irregularity in the structure .

2. (Previously Presented) The method of Claim 1, wherein the first data set and the second data set are in the time domain.

3. (Previously Presented) The method of Claim 2, wherein the first data set and the second data set represent A-scan data.

4. (Previously Presented) The method of Claim 1, wherein the first data set and the second data set are in the frequency domain.

5. (Previously Presented) The method of Claim 4, further comprising the step of converting the first data set and the second data set to time domain data before performing the identifying step.

6. (Previously Presented) The method of Claim 1, wherein the identifying step is performed by defining a gate length and-selecting a maximum signal value within each of a series of gate lengths.

7. (Previously Presented) The method of Claim 1, wherein the determining step is performed by defining a time limit within which both a value in the shifted set of peak signal values and a value in the unshifted set of peak signal values must occur.

8. (Previously Presented) The method of Claim 1, wherein the occurrence times correspond to peak signal values.

9. (Previously Presented) The method of Claim 1, wherein the occurrence times are determined by the median time during which data values exceed a threshold.

10. (Previously Presented) The method of Claim 1, wherein the probes are suitable for magnetostrictive testing.

11. (Previously Presented) The method of Claim 1, wherein the probes are suitable for Lamb wave testing.

12. (Currently Amended) A method of using long range guided wave inspection techniques to detect geometric irregularities in a conduit, comprising the steps of:

generating a first long range wave from a first probe at a first probe position, wherein the first long range wave travels substantially in one direction from the first probe along a length of the conduit;

acquiring a first data set representing reflection signals reflected from an irregularity in the conduit to the first probe;

generating a second long range wave from a second probe at a second probe position having a known separation from the first probe position, wherein the second long range wave travels in the same direction ~~as~~ **relative to** the first long range wave;

acquiring a second data set representing reflection signals reflected from the irregularity in the conduit to the second probe position;

wherein the first probe and the second probe are external to the conduit;

wherein the first long range wave and the second long range wave are **substantially** of a single wave mode of a fixed order, propagated in a single direction **relative to each other**;

identifying peak signal values in the first data set and in the second data set, thereby obtaining a first set of peak signal values and a second set of peak signal values;

associating each peak signal value with an occurrence time;

time-shifting one set of peak signal values by an amount equal to the roundtrip time of the first long range wave over the distance between the first probe and the second probe;

determining a coincidence in time of values in the shifted set of peak signal values and values in the unshifted set of peak signal values; and

interpreting coincident values as corresponding to an irregularity in the conduit.

13. (Previously Presented) The method of Claim 12, wherein the first data set and the second data set are in the time domain.

14. (Previously Presented) The method of Claim 13, wherein the first data set and the second data set represent A-scan data.

15. (Previously Presented) The method of Claim 12, wherein the first data set and the second data set are in the frequency domain.

16. (Previously Presented) The method of Claim 15, further comprising the step of converting the first data set and the second data set to time domain data before performing the identifying step.

17. (Previously Presented) The method of Claim 12, wherein the identifying step is performed by defining a gate length and-selecting a maximum signal value within each of a series of gate lengths.

18. (Previously Presented) The method of Claim 12, wherein the determining step is performed by defining a time limit within which both a value in the shifted set of peak signal values and a value in the unshifted set of peak signal values must occur.

19. (Previously Presented) The method of Claim 12, wherein the occurrence times correspond to peak signal values.

20. (Previously Presented) The method of Claim 12, wherein the occurrence times are determined by the median time during which data values exceed a threshold.

21. (Previously Presented) The method of Claim 12, wherein the probes are suitable for magnetostrictive testing.

22. (Previously Presented) The method of Claim 12, wherein the probes are external to the conduit.

23. (Previously Presented) The method of Claim 12, wherein the probes surround a section of the conduit.